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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/806,172	Applicant(s) OYABU ET AL.	
	Examiner David P. Rashid	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

All of the examiner's suggestions presented herein below have been assumed for examination purposes, unless otherwise noted.

Amendments

1. This office action is responsive to the claim and specification amendment received on 6/21/2007. **Claims 1 – 15** are pending.

Drawings

2. The replacement drawings were received on 6/21/2007 are acceptable. In response to applicant's drawing amendments and remarks, the previous drawing objections are withdrawn.

Specification

3. In response to applicant's specification amendments and remarks received on 6/21/2007, the previous specification objections are withdrawn.

Claim Objections

4. In response to applicant's claim objections amendments and remarks received on 6/21/2007, the previous claim objections are withdrawn.

Claim Rejections - 35 USC § 101

8. 35 U.S.C. 101 reads as follows:

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Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9. **Claims 14 and 15** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 14 and 15 recite “[a]n image processing program stored on a computer-readable medium...” and “[a]n image processing program” per se is non-statutory, as being an abstract idea. The element of “stored on a computer-readable medium” may be where it is stored, but it is the program itself that is being claimed – and thus non-statutory. Suggest changing to preamble of claims 14 and 15 to the following:

“A computer-readable medium comprising an image processing program which, when executed by a computer, cause the computer to perform an image processing method comprising:...”

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1, 3, and 12 – 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Scott et al. (US 5,097,518 A) in view of Hamilton, Jr. et al. (US 5,297,217 A).

Regarding **claim 1**, while Scott discloses an image processing apparatus for generating scaled image data that is obtained by scaling the image data according to a specified scaling factor (“Accordingly, an object of the present invention is to provide apparatus and

accompanying method(s) for scaling, specifically reducing, an original image for display as part of a composite image by a document workstation in an image management system.”, column 4, line 54. In specific “The above and other objects are also accomplished in accordance with the teachings of the present invention by the inventive fractional movement pixel saving reduction scaling technique.”, column 5, line 61 described in detail within FIG. 14 through FIG. 16.), the image processing apparatus comprising:

a receiver that receives an input of pixel value information of each pixel which is contained in image data to be processed in raster scan order (“Either prior to start of reduction scaling or while scaling is in process, the pixel values for the source image successively appear on lead 1601 and are successively written into the source image memory under the control of control logic 1640 and counters 1620 and 1630.”, column 46, line 27 wherein the receiver is lead 1601 from which the source image memory 1610 receives its pixel value information (image data). The receiver may also be considered the Input-X counter 1620 and Input-Y counter 1630 from which the source image memory 1610 receives its pixel value information (image X,Y address).);

a first memory that stores the pixel value information input in the raster scan order, the first memory having a capacity equal to or less than a main scanning direction width of the image data (It has been assumed for examination purposes that the main scanning direction is the X (horizontal) scanning direction and the subscanning direction is the Y (vertical) scanning direction. “The horizontal, X Address, appears on leads 1625; while the vertical, Y Address, appears on leads 1635. Both of these addresses are collectively applied as a common address to source image memory 1610. This memory stores the a complete bit map of the bi-tonal pixel

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values that form the source image.”, column 46, line 21 wherein the first memory is source image memory 1610. The memory stores the complete bit map of the bi-tonal pixels values of the source image, and thus holds the capacity equal to or less than a main scanning direction width of the image data since the memory capacity is greater.);

a second memory that is capable of retaining the scaled image data as much as the main scanning direction width relative to a main scanning direction and at least a part of the scaled image data relative to a subscanning direction (“After the scaled image has been fully generated, this image is read from memory 1650 on a serial basis over output lead 1655 under the control of control logic 1640.”, column 47, line 9 wherein the second memory is the scaled image memory 1650. As shown in FIG. 16, the input into the scaled image memory 1650 includes that of the X,Y scaled address leads 1677 and 1697, in combination with lead 1647 D_IN which is the data input from the source image. “In response to each high level pixel value appearing on lead 1615, control logic 1640 produces a high level signal on lead 1643 as a write enable signal to scaled image memory 1650 along with a high level on lead 1647 as the data input to this memory. As a result of these signals, scaled image memory 1650 writes a "one" into its currently addressed location.”, column 46, line 34.);

a destination address generator that generates destination address information in the second memory to specify a destination location of the pixel value information stored in the first memory in response to the specified scaling factor (“The integer address outputs produced by counters 1670 and 1690 are applied by leads 1677 and 1697, respectively, to a common address input to scaled image memory 1650.”, column 47, line 6 wherein the destination address

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generator are the counters 1670 and 1690 that generate the X,Y output address unto leads 1677 and 1697 to feed into scaled image memory 1650.); and

a transferring unit that transfers the pixel value information from the first memory to the second memory based on the generated destination address information (FIG. 16 discloses the control logic 1640 that transfers the pixel value information from the first memory to the second memory based on the generated destination address information. "During scaling, each pixel value in the source image that is accessed from memory 1610 is applied over lead 1615 as an input to control logic 1640.", column 46, line 32 from the first memory to the control logic and "In response to each high level pixel value appearing on lead 1615, control logic 1640 produces a high level signal on lead 1643 as a write enable signal to scaled image memory 1650 along with a high level on lead 1647 as the data input to this memory. As a result of these signals, scaled image memory 1650 writes a "one" into its currently addressed location.", column 46, line 34 from the control logic to the second memory. "Prior to the start of reduction scaling, the contents of registers 1670 and 1690 are suitably initialized by control logic 1640 through multiplexors 1669 and 1689, to one half the values of variables X.sub.-- OUTMOVE and Y.sub.-- OUTMOVE, respectively.", column 47, line 12 where the control logic 1640 is responsible for the transfer of image from the first memory to the second is based on the generated destination address information.), Scott does not teach

(i) an image data input section that receives input of image data described in a page description language; and

(ii) a page description language processing section that converts the page description language input image data.

Hamilton discloses a technique (FIG. 1) for collectively performing image rotation, scaling, and halftone screening that includes

(i) an image data input section (FIG. 1, elements 7, 10) that receives input of image data (FIG. 1, element 8) described in a page description language (leftmost text in FIG. 1); and

(ii) a page description language processing section (FIG. 1, element 13) that converts (FIG. 1, elements 17, 25, 33) the page description language input image data.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the image processing apparatus for generating scaled image data of Scott to include (i) an image data input section that receives input of image data described in a page description language; and (ii) a page description language processing section that converts the page description language input image data as taught by Hamilton (and thus in effect consequentially allowing the receiver of Scott that receives an input of pixel value information of each pixel which is contained in the converted image data to be processed in raster scan order) “...to provide apparatus and accompanying methods that can very accurately, though inexpensively, implement image scaling, rotation and halftoning of a continuous tons (contone) image in a post-processing environment.”, Hamilton, Col. 4, lines 30 – 37 and “...to provide such apparatus and methods that can provide image scaling rotation and halftoning at speeds that will sufficiently accelerate the processing throughput of a page description language to approximately match the throughput provided by many currently available output writers.”, Hamilton, Col. 4, lines 42 – 47.

Regarding **claim 3**, Scott discloses the image processing apparatus as claimed in claim 1 further comprising:

a dividing unit that divides the image data into pixel blocks of a size defined based on the capacity of the first memory (The lead 1601 as cited in claim 1 may also be considered the dividing unit that also divides the image data into pixel blocks of a size of exactly “one pixel” based on the capacity of the first memory. As long as the image itself is more than one pixel, the lead 1601 feeding data into the source image memory 1610 is naturally divided by the lead 1601 into separate pixels, and hence can be considered the dividing unit.), wherein

the first memory stores the pixel value information contained in the divided pixel block (“Either prior to start of reduction scaling or while scaling is in process, the pixel values for the source image successively appear on lead 1601 and are successively written into the source image memory under the control of control logic 1640 and counters 1620 and 1630.”, column 46, line 27 wherein the receiver is lead 1601 from which the source image memory 1610 receives its pixel value information (image data).).

Regarding **claim 12**, while Scott discloses an image processing method for generating scaled image data that is obtained by scaling the image data according to a specified scaling factor (“Accordingly, an object of the present invention is to provide apparatus and accompanying method(s) for scaling, specifically reducing, an original image for display as part of a composite image by a document workstation in an image management system.”, column 4, line 54. In specific “The above and other objects are also accomplished in accordance with the teachings of the present invention by the inventive fractional movement pixel saving reduction scaling technique.”, column 5, line 61 described in detail within FIG. 14 through FIG. 16.), the image processing method comprising:

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receiving an input of pixel value information of each pixel which is contained in image data to be processed in raster scan order (“Either prior to start of reduction scaling or while scaling is in process, the pixel values for the source image successively appear on lead 1601 and are successively written into the source image memory under the control of control logic 1640 and counters 1620 and 1630.”, column 46, line 27 wherein the receiver is lead 1601 from which the source image memory 1610 receives its pixel value information (image data). The receiver may also be considered the Input-X counter 1620 and Input-Y counter 1630 from which the source image memory 1610 receives its pixel value information (image X,Y address).);

storing the pixel value information input in the raster scan order in a first memory which has a capacity equal to or less than a main scanning direction width of the image data (“The horizontal, X Address, appears on leads 1625; while the vertical, Y Address, appears on leads 1635. Both of these addresses are collectively applied as a common address to source image memory 1610. This memory stores the a complete bit map of the bi-tonal pixel values that form the source image.”, column 46, line 21 wherein the first memory is source image memory 1610. The memory stores the complete bit map of the bi-tonal pixels values of the source image, and thus holds the capacity equal to or less than a main scanning direction width of the image data since the memory capacity is greater.);

generating destination address information in the second memory to specify a destination location of the pixel value information stored in the first memory in response to the specified scaling factor, wherein the second memory is capable of retaining the scaled image data as much as the main scanning direction width relative to a main scanning direction and at least a part of the scaled image data relative to a subscanning direction (“The integer address outputs produced

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by counters 1670 and 1690 are applied by leads 1677 and 1697, respectively, to a common address input to scaled image memory 1650.”, column 47, line 6 wherein the destination address generator are the counters 1670 and 1690 that generate the X,Y output address unto leads 1677 and 1697 to feed into scaled image memory 1650.

“After the scaled image has been fully generated, this image is read from memory 1650 on a serial basis over output lead 1655 under the control of control logic 1640.”, column 47, line 9 wherein the second memory is the scaled image memory 1650. As shown in FIG. 16, the input into the scaled image memory 1650 includes that of the X,Y scaled address leads 1677 and 1697, in combination with lead 1647 D_IN which is the data input from the source image. “In response to each high level pixel value appearing on lead 1615, control logic 1640 produces a high level signal on lead 1643 as a write enable signal to scaled image memory 1650 along with a high level on lead 1647 as the data input to this memory. As a result of these signals, scaled image memory 1650 writes a "one" into its currently addressed location.”, column 46, line 34.); and

transferring the pixel value information from the first memory to a second memory based on the generated destination address information (FIG. 16 discloses the control logic 1640 that transfers the pixel value information from the first memory to the second memory based on the generated destination address information. “During scaling, each pixel value in the source image that is accessed from memory 1610 is applied over lead 1615 as an input to control logic 1640.”, column 46, line 32 from the first memory to the control logic and “In response to each high level pixel value appearing on lead 1615, control logic 1640 produces a high level signal on lead 1643 as a write enable signal to scaled image memory 1650 along with a high level on lead 1647 as

the data input to this memory. As a result of these signals, scaled image memory 1650 writes a "one" into its currently addressed location.", column 46, line 34 from the control logic to the second memory. "Prior to the start of reduction scaling, the contents of registers 1670 and 1690 are suitably initialized by control logic 1640 through multiplexors 1669 and 1689, to one half the values of variables X.sub.-- OUTMOVE and Y.sub.-- OUTMOVE, respectively.", column 47, line 12 where the control logic 1640 is responsible for the transfer of image from the first memory to the second is based on the generated destination address information.), Scott does not teach

(i) an image data input section that receives input of image data described in a page description language; and

(ii) a page description language processing section that converts the page description language input image data.

Hamilton discloses a technique (FIG. 1) for collectively performing image rotation, scaling, and halftone screening that includes

(i) an image data input section (FIG. 1, elements 7, 10) that receives input of image data (FIG. 1, element 8) described in a page description language (leftmost text in FIG. 1); and

(ii) a page description language processing section (FIG. 1, element 13) that converts (FIG. 1, elements 17, 25, 33) the page description language input image data.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the image processing apparatus for generating scaled image data of Scott to include (i) an image data input section that receives input of image data described in a page description language; and (ii) a page description language processing section that converts the

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page description language input image data as taught by Hamilton (and thus in effect consequentially allowing the receiver of Scott that receives an input of pixel value information of each pixel which is contained in the converted image data to be processed in raster scan order) “...to provide apparatus and accompanying methods that can very accurately, though inexpensively, implement image scaling, rotation and halftoning of a continuous tone image in a post-processing environment.”, Hamilton, Col. 4, lines 30 – 37 and “...to provide such apparatus and methods that can provide image scaling rotation and halftoning at speeds that will sufficiently accelerate the processing throughput of a page description language to approximately match the throughput provided by many currently available output writers.”, Hamilton, Col. 4, lines 42 – 47.

Regarding **claim 13**, while Scott discloses an image processing method for generating scaled image data that is obtained by scaling the image data according to a specified scaling factor (refer to references/arguments cited in claim 12), the image processing method comprising:

receiving an input of pixel value information of each pixel which is contained in image data to be processed in raster scan order (refer to references/arguments cited in claim 12);

storing the pixel value information input in the raster scan order in a first memory which has a capacity equal to or less than the main scanning direction width of the image data (refer to references/arguments cited in claim 12);

generating a source address information in the first memory that stores the pixel value information to be retained in each address in the second memory, that is capable of retaining the scaled image data as much as the main scanning direction width relative to a main scanning

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direction and at least a part of the scaled image data relative to a subscanning direction, based on an address shift amount determined in response to the specified scaling factor (“The address to memory 1650 is formed by adders 1660 and 1680, and Output.sub.-- X and Output.sub.-- Y registers 1670 and 1690.”, column 46, line 43 wherein the source address generating unit are the registers 1670 and 1690 and their preceding elements); and

transferring the pixel value information from the first memory to a second memory based on the generated source address information (refer to references/arguments cited in claim 12),

Scott does not teach

(i) an image data input section that receives input of image data described in a page description language; and

(ii) a page description language processing section that converts the page description language input image data.

Hamilton discloses a technique (FIG. 1) for collectively performing image rotation, scaling, and halftone screening that includes

(i) an image data input section (FIG. 1, elements 7, 10) that receives input of image data (FIG. 1, element 8) described in a page description language (leftmost text in FIG. 1); and

(ii) a page description language processing section (FIG. 1, element 13) that converts (FIG. 1, elements 17, 25, 33) the page description language input image data.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the image processing apparatus for generating scaled image data of Scott to include (i) an image data input section that receives input of image data described in a page description language; and (ii) a page description language processing section that converts the

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page description language input image data as taught by Hamilton (and thus in effect consequentially allowing the receiver of Scott that receives an input of pixel value information of each pixel which is contained in the converted image data to be processed in raster scan order) “...to provide apparatus and accompanying methods that can very accurately, though inexpensively, implement image scaling, rotation and halftoning of a continuous tone image in a post-processing environment.”, Hamilton, Col. 4, lines 30 – 37 and “...to provide such apparatus and methods that can provide image scaling rotation and halftoning at speeds that will sufficiently accelerate the processing throughput of a page description language to approximately match the throughput provided by many currently available output writers.”, Hamilton, Col. 4, lines 42 – 47.

Regarding **claim 14**, while Scott discloses an image processing program stored on a computer-readable medium comprising computer executable instructions which, when executed by a computer, causes the computer to perform an (Refer to references/arguments cited in claim 12. Scott discloses the present invention as an image processing program for realizing a processing to a computer as cited “Disk 225 stores the remainder of the program that will be executed by either central processing unit 220 and the entire program executed by image processor 265.”, column 10, line 31.) image processing method comprising:

receiving an input of pixel value information of each pixel which is contained in image data to be processed in raster scan order; storing the pixel value information input in the raster scan order in a first memory which has a capacity equal to or less than a main scanning direction width of the image data (refer to references/arguments cited in claim 12);

generating destination address information in the second memory to specify a destination location of the pixel value information stored in the first memory in response to the specified scaling factor, wherein the second memory is capable of retaining the scaled image data as much as the main scanning direction width relative to a main scanning direction and at least a part of the scaled image data relative to a subscanning direction (refer to references/arguments cited in claim 12); and

transferring the pixel value information from the first memory to a second memory based on the generated destination address information (refer to references/arguments cited in claim 12), Scott does not teach

(i) an image data input section that receives input of image data described in a page description language; and

(ii) a page description language processing section that converts the page description language input image data.

Hamilton discloses a technique (FIG. 1) for collectively performing image rotation, scaling, and halftone screening that includes

(i) an image data input section (FIG. 1, elements 7, 10) that receives input of image data (FIG. 1, element 8) described in a page description language (leftmost text in FIG. 1); and

(ii) a page description language processing section (FIG. 1, element 13) that converts (FIG. 1, elements 17, 25, 33) the page description language input image data.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the image processing apparatus for generating scaled image data of Scott to include (i) an image data input section that receives input of image data described in a page

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description language; and (ii) a page description language processing section that converts the page description language input image data as taught by Hamilton (and thus in effect consequentially allowing the receiver of Scott that receives an input of pixel value information of each pixel which is contained in the converted image data to be processed in raster scan order) “...to provide apparatus and accompanying methods that can very accurately, though inexpensively, implement image scaling, rotation and halftoning of a continuous tone (contone) image in a post-processing environment.”, Hamilton, Col. 4, lines 30 – 37 and “...to provide such apparatus and methods that can provide image scaling rotation and halftoning at speeds that will sufficiently accelerate the processing throughput of a page description language to approximately match the throughput provided by many currently available output writers.”, Hamilton, Col. 4, lines 42 – 47.

Regarding **claim 15**, while Scott discloses an image processing program stored on a computer-readable medium comprising computer executable instructions which, when executed by a computer, causes the computer to perform an (Refer to references/arguments cited in claim 12. Scott discloses the present invention as an image processing program for realizing a processing to a computer as cited “Disk 225 stores the remainder of the program that will be executed by either central processing unit 220 and the entire program executed by image processor 265.”, column 10, line 31.) image processing program comprising:

receiving an input of pixel value information of each pixel which is contained in image data to be processed in raster scan order (refer to references/arguments cited in claim 12);

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storing the pixel value information input in the raster scan order in a first memory which has a capacity equal to or less than the main scanning direction width of the image data (refer to references/arguments cited in claim 12);

generating a source address information in the first memory that stores the pixel value information to be retained in each address in the second memory, that is capable of retaining the scaled image data as much as the main scanning direction width relative to a main scanning direction and at least a part of the scaled image data relative to a subscanning direction, based on an address shift amount determined in response to the specified scaling factor (refer to references/arguments cited in claim 13); and

transferring the pixel value information from the first memory to a second memory based on the generated source address information (refer to references/arguments cited in claim 12),
Scott does not teach

(i) an image data input section that receives input of image data described in a page description language; and

(ii) a page description language processing section that converts the page description language input image data.

Hamilton discloses a technique (FIG. 1) for collectively performing image rotation, scaling, and halftone screening that includes

(i) an image data input section (FIG. 1, elements 7, 10) that receives input of image data (FIG. 1, element 8) described in a page description language (leftmost text in FIG. 1); and

(ii) a page description language processing section (FIG. 1, element 13) that converts (FIG. 1, elements 17, 25, 33) the page description language input image data.

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It would have been obvious to one of ordinary skill in the art at the time the invention was made for the image processing apparatus for generating scaled image data of Scott to include (i) an image data input section that receives input of image data described in a page description language; and (ii) a page description language processing section that converts the page description language input image data as taught by Hamilton (and thus in effect consequentially allowing the receiver of Scott that receives an input of pixel value information of each pixel which is contained in the converted image data to be processed in raster scan order) “...to provide apparatus and accompanying methods that can very accurately, though inexpensively, implement image scaling, rotation and halftoning of a continuous tone (contone) image in a post-processing environment.”, Hamilton, Col. 4, lines 30 – 37 and “...to provide such apparatus and methods that can provide image scaling rotation and halftoning at speeds that will sufficiently accelerate the processing throughput of a page description language to approximately match the throughput provided by many currently available output writers.”, Hamilton, Col. 4, lines 42 – 47.

7. **Claims 2 and 4 – 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Scott et al. (US 5,097,518 A) in view of Shyu et al. (US 5,825,367 A) and Hamilton, Jr. et al. (US 5,297,217 A).

Regarding **claim 2**, while Scott discloses an image processing apparatus for generating scaled image data that is obtained by scaling the image data according to a specified scaling factor (refer to references/arguments cited in claim 1), the image processing apparatus comprising:

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a receiver that receives an input of pixel value information of each pixel which is contained in image data to be processed in raster scan order (refer to references/arguments cited in claim 1);

a first memory that stores the pixel value information input in the raster scan order, the first memory having a capacity equal to or less than a main scanning direction width of the image data (“After the scaled image has been fully generated, this image is read from memory 1650 on a serial basis over output lead 1655 under the control of control logic 1640.”, column 47, line 9 wherein the first memory is the scaled image memory 1650. As shown in FIG. 16, the input into the scaled image memory 1650 includes that of the X,Y scaled address leads 1677 and 1697, in combination with lead 1647 D_IN which is the data input from the source image. “In response to each high level pixel value appearing on lead 1615, control logic 1640 produces a high level signal on lead 1643 as a write enable signal to scaled image memory 1650 along with a high level on lead 1647 as the data input to this memory. As a result of these signals, scaled image memory 1650 writes a "one" into its currently addressed location.”, column 46, line 34.);

a source address generating unit that generates a source address information in the first memory that stores the pixel value information to be retained in each address in the second memory based on an address shift amount determined in response to the specified scaling factor (“The address to memory 1650 is formed by adders 1660 and 1680, and Output.sub.-- X and Output.sub.-- Y registers 1670 and 1690.”, column 46, line 43 wherein the source address generating unit are the registers 1670 and 1690 and their preceding elements (all of the elements above the output registers in FIG. 16)); and

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a transferring unit that transfers the pixel value information from the first memory to the second memory based on the generated source address information (“After the scaled image has been fully generated, this image is read from memory 1650 on a serial basis over output lead 1655 under the control of control logic 1640.”, column 47, line 9 wherein the transferring unit is the lead 1655.), Scott does not teach

(i) a second memory that is capable of retaining the scaled image data as much as the main scanning direction width relative to a main scanning direction and at least a part of the scaled image data relative to a subscanning direction;

(ii) an image data input section that receives input of image data described in a page description language; and

(iii) a page description language processing section that converts the page description language input image data.

Shyu discloses an apparatus for real time two-dimensional scaling of a digital image (“...the object of the present invention is to provide an apparatus which is capable of real-time two-dimensional uniform scaling of a digital image.”, column 2, line 10) that teaches a second memory that is capable of retaining the scaled image data as much as the main scanning direction width relative to a main scanning direction and at least a part of the scaled image data relative to a subscanning direction (“The original image is then scaled in a first dimension, and the resulting one-dimensional scaled image is stored in the frame memory. The scaled image is then scaled in a second dimension, and the resulting two-dimensional scaled image is stored in the frame memory before being provided to an output device, such as a computer display or printer.”, column 1, line 57.).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the image processing apparatus of Scott to include a second memory of Shyu that is capable of retaining the scaled image data as much as the main scanning direction width relative to a main scanning direction and at least a part of the scaled image data relative to a subscanning direction as taught by Shyu to have a memory that completely contains the capacity of the scaled image, and "...to perform variable expansion and shrinkage of the image...", Shyu, column 1, line 53.

Hamilton discloses a technique (FIG. 1) for collectively performing image rotation, scaling, and halftone screening that includes

- (ii) an image data input section (FIG. 1, elements 7, 10) that receives input of image data (FIG. 1, element 8) described in a page description language (leftmost text in FIG. 1); and
- (iii) a page description language processing section (FIG. 1, element 13) that converts (FIG. 1, elements 17, 25, 33) the page description language input image data.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the image processing apparatus for generating scaled image data of Scott in view of Shyu to include (ii) an image data input section that receives input of image data described in a page description language; and (iii) a page description language processing section that converts the page description language input image data as taught by Hamilton (and thus in effect consequentially allowing the receiver of Scott in view of Shyu that receives an input of pixel value information of each pixel which is contained in the converted image data to be processed in raster scan order) "...to provide apparatus and accompanying methods that can very accurately, though inexpensively, implement image scaling, rotation and halftoning of a

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continuous tons (contone) image in a post-processing environment.”, Hamilton, Col. 4, lines 30 – 37 and “...to provide such apparatus and methods that can provide image scaling rotation and halftoning at speeds that will sufficiently accelerate the processing throughput of a page description language to approximately match the throughput provided by many currently available output writers.”, Hamilton, Col. 4, lines 42 – 47.

Regarding **claim 4**, Scott discloses further comprising:

a dividing unit that divides the image data into pixel blocks of a size defined based on the capacity of the first memory (The lead 1601 as cited in claim 1 may also be considered the dividing unit that also divides the image data into pixel blocks of a size of exactly “one pixel” based on the capacity of the first memory. As long as the image itself is more than one pixel, the lead 1601 feeding data into the source image memory 1610 is naturally divided by the lead 1601 into separate pixels, and hence can be considered the dividing unit.), wherein the first memory stores the pixel value information contained in the divided pixel block (“In response to each high level pixel value appearing on lead 1615, control logic 1640 produces a high level signal on lead 1643 as a write enable signal to scaled image memory 1650 along with a high level on lead 1647 as the data input to this memory.”. column 46, line 34.).

Regarding **claim 5**, Scott discloses wherein the source address generating unit generates the source address using an offset value (“The output of these adders is routed via leads 1667 and 1687 and multiplexors 1669 and 1689 to Output.sub.-- X and Output.sub.-- Y registers 1670 and 1690 and clocked therein at successive clock edges during reduction scaling.”, column 46, line 51 where the offset value is Output_X and Output_Y from the multiplexors 1669 and 1689.);

the offset value is provided based on a cumulative addition calculation of the address shift amount (As disclosed in FIG. 16, offset values Output_X and Output_Y are based on a cumulative addition calculation of the address shift amounts X-OUTMOVE and Y-OUTMOVE.); and

the source address generating unit includes: a retaining unit that retains at least a decimal place of the offset value at a point after the pixel value information is transferred (“The full contents, i.e. both the integer and non-integer components, of registers 1670 and 1690 are fed back, via leads 1673 and 1693, respectively, to corresponding inputs of adders 1660 and 1680.”, column 46, line 61 wherein the retaining unit are the leads 1673 and 1693.).

Regarding **claim 6**, Scott discloses wherein the source address generating unit generates the source addresses using respective offset values relative to the main scanning direction and the subscanning direction (It has been assumed for examination purposes that the main scanning direction is the X (horizontal) scanning direction and the subscanning direction is the Y (vertical) scanning direction. “The output of these adders is routed via leads 1667 and 1687 and multiplexors 1669 and 1689 to Output.sub.-- X and Output.sub.-- Y registers 1670 and 1690 and clocked therein at successive clock edges during reduction scaling.”, column 46, line 51 where the offset value is Output_X and Output_Y from the multiplexors 1669 and 1689.);

the respective offset values are provided by performing a cumulative addition calculation of the address shift amounts responsive to the scaling factor in the main scanning direction and that in the subscanning direction (As disclosed in FIG. 16, offset values Output_X and Output_Y are based on a cumulative addition calculation of the address shift amounts X-OUTMOVE and Y-OUTMOVE.); and

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the source address generating unit includes: a first retaining unit that retains at least a decimal place of the offset value relative to the main scanning direction at a point after the pixel value information is transferred; and a second retaining unit that retains at least a decimal place of the offset value relative to the subscanning direction (“The full contents, i.e. both the integer and non-integer components, of registers 1670 and 1690 are fed back, via leads 1673 and 1693, respectively, to corresponding inputs of adders 1660 and 1680.”, column 46, line 61 wherein the retaining unit are the leads 1673 and 1693.).

Regarding **claim 7**, Scott discloses wherein the source address generating unit further includes:

an initial value retaining unit that retains at least the decimal place of the offset value at the point when the pixel value information has been transferred as much as a capacity of the second memory as an initial value of a next source address calculation, if the second memory cannot retain the pixel value information as much as the subscanning direction width of the scaled image data (“The full contents, i.e. both the integer and non-integer components, of registers 1670 and 1690 are fed back, via leads 1673 and 1693, respectively, to corresponding inputs of adders 1660 and 1680.”, column 46, line 61. Regardless of whether the pixel value information has been transferred as much as a capacity of the second memory as an initial value of a next source address calculation, if the second memory cannot retain the pixel value information as much as the subscanning direction width of the scaled image data, the initial value retaining unit (again, leads 1673 and 1693) retains at least the decimal place of the offset value by transferring the full value every time. Thus, if there ever was a case from which the pixel value information had been transferred as much as a capacity of the second memory as an initial

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value of a next source address calculation, if the second memory cannot retain the pixel value information as much as the subscanning direction width of the scaled image data, the initial value retaining unit will automatically retain the full offset value which includes at least the decimal place of the offset value.).

Regarding **claim 8**, Scott discloses wherein the address shift amount is a reciprocal of the specified scaling factor (As mentioned in claim 5, X-OUTMOVE and Y-OUTMOVE are the address shift amounts. “As shown, upon entry into process 1400, step 1405 is first performed which assigns the reciprocals of the desired X and Y scale factors, i.e. X.sub.-- SCALEFACTOR and Y.sub.-- SCALEFACTOR, to variables X.sub.-- OUTMOVE and Y.sub.-- OUTMOVE. X.sub.-- OUTMOVE and Y.sub.-- OUTMOVE store the size of the movement, which is fractional for reduction scaling, in the scaled image that corresponds to a one pixel movement in the input image.”, column 43, line 3.); and

the source address generating unit updates the offset value by adding the address shift amount to the current offset value (As disclosed in FIG. 16 the current full value on lead 1673 is fed into adder 1660 with the address shift amount X-OUTMOVE.), and increments the source address by one if the updated offset value becomes one or more (As mentioned above, the updated offset value is the “full value” being currently updated on lead 1673. Every cycle requires the full value to be added to the reciprocal of the scaling factor (X-OUTMOVE) through adders 1660 and 1680. The combination is then taken through the multiplexer and output register before the full integer value is represented as the address, and the full value is fed back into the adder.

To show that the source address generating unit increments the source address by one if the updated offset value becomes one or more, let us take the scaling factor of $2/3$ (reducing the source image 66%) for example. The X-OUTMOVE value is the reciprocal $3/2$ ($=1.5$), and as cited starting from column 47, line 12, divider 1666 initially divides the X-OUTMOVE by 2 before proceeding with the cycles:

Cycle 1: 1 (first source address, full value) $+ 0.75$ (1.5 (X-OUTMOVE) $/ 2$ by divider) $= 1.75$ (full value) $= 1$ (integer value)

Cycle 2: 1.75 (full value) $+ 1.5$ (X-OUTMOVE) $= 3.25$ (full value) $= 3$ (integer value)

Cycle 3: $3.25 + 1.5 = 4.75 = 4$ (integer value)

We then obtain the set $\{1, 3, 4, 6, 7, 9, 10, 12, 13, \dots\}$ to obtain the source address locations of the original image to become the scaled image by $2/3$. From the set, it can easily be shown a “jump in the address by one” (ex. from 7 to 9, as opposed to “an increment by one” like 9 to 10) occurs when the decimal value of the increasing full value exceeds the value of one (ex. for the jump in source address from 7 to 9, the full value jumps from 7.75 to 9.25, meaning the integer value of the difference in full values is exactly one ($9.25 - 7.75 = 1.5 = 1$ (integer value))).).

Regarding **claim 9**, Scott discloses wherein the address shift amount is a reciprocal of the specified scaling factor (As mentioned in claim 5, X-OUTMOVE and Y-OUTMOVE are the address shift amounts. “As shown, upon entry into process 1400, step 1405 is first performed which assigns the reciprocals of the desired X and Y scale factors, i.e. X.sub.-- SCALEFACTOR and Y.sub.-- SCALEFACTOR, to variables X.sub.-- OUTMOVE and Y.sub.-- OUTMOVE. X.sub.-- OUTMOVE and Y.sub.-- OUTMOVE store the size of the movement, which is

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fractional for reduction scaling, in the scaled image that corresponds to a one pixel movement in the input image.”, column 43, line 3.); and

the source address generating unit updates the offset value by adding the address shift amount to the current offset value (As disclosed in FIG. 16 the current full value on lead 1673 is fed into adder 1660 with the address shift amount X-OUTMOVE.), and increments the source address by one if the updated offset value becomes one or more (refer to references/arguments cited in claim 8).

Regarding **claim 10**, Scott discloses wherein the address shift amount is a reciprocal of the specified scaling factor (As mentioned in claim 5, X-OUTMOVE and Y-OUTMOVE are the address shift amounts. “As shown, upon entry into process 1400, step 1405 is first performed which assigns the reciprocals of the desired X and Y scale factors, i.e. X.sub.-- SCALEFACTOR and Y.sub.-- SCALEFACTOR, to variables X.sub.-- OUTMOVE and Y.sub.-- OUTMOVE. X.sub.-- OUTMOVE and Y.sub.-- OUTMOVE store the size of the movement, which is fractional for reduction scaling, in the scaled image that corresponds to a one pixel movement in the input image.”, column 43, line 3.); and

the source address generating unit updates the offset value by adding the address shift amount to the current offset value (As disclosed in FIG. 16 the current full value on lead 1673 is fed into adder 1660 with the address shift amount X-OUTMOVE.), and increments the source address by one if the updated offset value becomes one or more (refer to references/arguments cited in claim 8).

Regarding **claim 11**, Scott discloses wherein the address shift amount is a reciprocal of the specified scaling factor (As mentioned in claim 5, X-OUTMOVE and Y-OUTMOVE are the

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address shift amounts. “As shown, upon entry into process 1400, step 1405 is first performed which assigns the reciprocals of the desired X and Y scale factors, i.e. X.sub.-- SCALEFACTOR and Y.sub.-- SCALEFACTOR, to variables X.sub.-- OUTMOVE and Y.sub.-- OUTMOVE. X.sub.-- OUTMOVE and Y.sub.-- OUTMOVE store the size of the movement, which is fractional for reduction scaling, in the scaled image that corresponds to a one pixel movement in the input image.”, column 43, line 3.); and

the source address generating unit

updates the offset value by adding the address shift amount to the current offset value (As disclosed in FIG. 16 the current full value on lead 1673 is fed into adder 1660 with the address shift amount X-OUTMOVE.),

increments the source address by one if the updated offset value becomes one or more (refer to references/arguments cited in claim 8),

refers to a location of the pixel value information stored in the first memory on the image data to be processed (“The integer address outputs produced by counters 1670 and 1690 are applied by leads 1677 and 1697, respectively, to a common address input to scaled image memory 1650.”, column 47, line 6), and

sets the offset value to the initial value retained in the initial value retaining unit if the location satisfies a predetermined condition (“Prior to the start of reduction scaling, the contents of registers 1670 and 1690 are suitably initialized by control logic 1640 through multiplexors 1669 and 1689, to one half the values of variables X.sub.-- OUTMOVE and Y.sub.-- OUTMOVE, respectively. Specifically, an INIT pulse applied to a control (C) input of each multiplexor cause multiplexors 1669 and 1689 to route one

half of the value of variables X.sub.-- OUTMOVE and Y.sub.-- OUTMOVE to the inputs of Output.sub.-- X register 1670 and Output.sub.-- Y register 1690.”, column 47, line 12. In essence, if the location satisfies the predetermined condition of being null or 0 (prior to the starting of reduction scaling), the offset value is set to the initial value retained in the initial value retaining unit to be one half the values of variables X-OUTMOVE and Y-OUTMOVE.).

Response to Arguments

8. Applicant’s arguments filed on 6/21/2007 with respect to claims **1, 2, and 12 – 15** have been respectfully and fully considered, by they are not found persuasive.

Summary of Remarks regarding claim 1, 2, and 12 – 15:

Applicant argues that Scott fails to teach or disclose an image data input section that receives input of image data described in a page description language, and a page description language processing section that converts the page description language input image data. Shya fails to cure the deficiency of Scott, and accordingly, the applied references (alone and/or in combination) fail to teach/suggest every feature of the independent claims. For at least the reasons given, the independent claims as well as their respective dependent claims are patentable over Scott and Scott in view of Shya (@ response page 13).

Examiner’s Response:

Though Scott and Scott in view of Shya fail to teach or disclose an image data input section that receives input of image data described in a page description language, and a page

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description language processing section that converts the page description language input image data, Hamilton, Jr. et al. (US 5,297,217 A) includes a page description language section before scaling of the image

(more specifically – (i) an image data input section (FIG. 1, elements 7, 10) that receives input of image data (FIG. 1, element 8) described in a page description language (leftmost text in FIG. 1); and (ii) a page description language processing section (FIG. 1, element 13) that converts (FIG. 1, elements 17, 25, 33) the page description language input image data)

that would have been obvious to one of ordinary skill in the art at the time the invention was made “...to provide apparatus and accompanying methods that can very accurately, though inexpensively, implement image scaling, rotation and halftoning of a continuous tone (contone) image in a post-processing environment.”, Hamilton, Col. 4, lines 30 – 37 and “...to provide such apparatus and methods that can provide image scaling rotation and halftoning at speeds that will sufficiently accelerate the processing throughput of a page description language to approximately match the throughput provided by many currently available output writers.”, Hamilton, Col. 4, lines 42 – 47.

The references Scott in view of Hamilton, and Scot in view of Shyu and Hamilton anticipate the independent claims 1, 2, and 12 – 15 and their respective dependent claims.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David P. Rashid whose telephone number is (571) 270-1578. The examiner can normally be reached Monday - Friday 8:30 - 17:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Werner can be reached on (571) 272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David P. Rashid/
Examiner, Art Unit 2624

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